GEOL 1002 Physical Geology Laboratory **Lec. 0 Lab. 3 Cr. 1**

Effective Date: Fall 2007

Course Description:
Pre or Corequisite: GEOL 1001. Laboratory course to accompany Physical Geology (GEOL 1001).

Rationale:
This laboratory course is essential in introducing students to the identification of rocks and minerals in hand specimen, with stereoscope, and with petrographic microscope. It will introduce students to the use and construction of topographic and geologic maps.

Course Objectives
Students will:
1. Become familiar with the means of mineral and rock identification, and be able to identify 20-30 common minerals and rocks.
2. Become familiar with topographic maps, how to use them and construct them.
3. Understand geologic maps, how they are made, what information they provide, and how to construct them.
4. Understand basic concepts and use of the polarizing microscope and be able to use it to identify basic minerals, textures, and rock types.

Procedures to Evaluate these Objectives
1. Laboratory exercises in class
2. Lab reports
3. Lab quizzes
4. Cumulative final laboratory exam

Use of Results of Evaluation to Improve the Course
1. Student responses from lab work and laboratory reports will be used to provide immediate feedback to students on concept misunderstanding.
2. In-class quizzes and exams will be graded and returned with written evaluations to provide improved understanding of student difficulties in understanding.
3. The cumulative final exam will be graded and examined to determine areas of teaching which could use improvement.
4. All evaluation methods will be constantly monitored to determine if there is a more effective method of presenting the material.

Detailed Topical Outline

1. Introduction to Minerals
2. Physical Properties of Minerals and Mineral identification—hand specimens and stereoscopic examination
3. Igneous Rocks—hand specimens and stereoscopic examination
4. Sedimentary Rocks—hand specimens and stereoscopic examination
5. Metamorphic Rocks—hand specimens and stereoscopic examination
6. Introduction to Petrographic Microscope-Physics of Optics, Construction of the petrographic microscope
7. Petrographic Microscope: Igneous Rocks
8. Petrographic Microscope: Sedimentary Rocks
9. Petrographic Microscope: Metamorphic Rocks
10. Topographic Maps
11. Structural Geology basics—strike and dips, outcrop patterns of planar, folded, faulted structures
12. Geologic Maps—streams
13. Geologic Maps—coastal areas and sedimentary terranes
14. Geologic Maps—glaciers and glaciated terranes
15. Geologic Maps—intrusive and volcanic terranes
16. Geologic Maps—folded and faulted terranes